

IN THE CLAIMS:

Please AMEND claims 1 and 16 in accordance with the following:

1. (CURRENTLY AMENDED) A method of fabricating lead-free solder bumps, comprising:

providing a wafer having a protective layer with an open electrode pad;

forming an UBM (under bump metallization) layer on the wafer;

lithographing a photoresist on the UBM layer, excluding a portion of the UBM layer corresponding to the electrode pad;

forming a copper layer on the portion of the UBM layer corresponding to the electrode pad;

plating solder on the copper layer;

removing the photoresist; and

etching the UBM layer using the solder as a mask, and reflowing the solder and fabricating the solder bumps to which the copper layer is diffused.

2. (ORIGINAL) The method of fabricating lead-free solder bumps according to claim 1, wherein the solder comprises tin.

3. (ORIGINAL) The method of fabricating lead-free solder bumps according to claim 2, wherein the solder further comprises silver.

4. (ORIGINAL) The method of fabricating lead-free solder bumps according to claim 1, wherein the reflowing is performed for about 1 minute to about 20 minutes at a temperature of about 230° to about 270°C.

5. (ORIGINAL) The method of fabricating lead-free solder bumps according to claim 1, wherein the copper layer has a thickness ranging from about 5 µm to about 20 µm.

6. (ORIGINAL) The method of fabricating lead-free solder bumps according to claim 1, wherein the UBM layer comprises a first layer applied to the wafer, having one of titanium (Ti), tungsten (W), chrome (Cr), and titanium/tungsten (TiW), and a second layer applied to the first layer, having one of copper (Cu), nickel (Ni), a nickel/vanadium (Ni-V) alloy, and a copper/nickel (Cu-Ni) alloy.

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14. (ORIGINAL) The method of fabricating lead-free solder bumps according to claim 1, wherein said reflowing the solder is performed before said etching the UBM layer.

15. (ORIGINAL) The method of fabricating lead-free solder bumps according to claim 1, wherein said reflowing the solder is performed after said etching the UBM layer.

16. (CURRENTLY AMENDED) A method of fabricating lead-free solder bumps on a wafer having an electrode pad, comprising:

forming an UBM (under bump metallization) layer on the wafer;

forming a copper layer on the portion of the UBM layer corresponding to the electrode pad and plating solder on the copper layer; and

reflowing the solder to form the solder bumps to which the copper layer is diffused.

17. (ORIGINAL) The method of fabricating lead-free solder bumps according to claim 16, further comprising:

lithographing a photoresist on the UBM layer, excluding a portion of the UBM layer corresponding to the electrode pad, after said forming an UBM layer on the wafer;

removing the photoresist after said plating solder on the copper layer; and

etching the UBM layer using the solder as a mask after said removing the photoresist.

18. (ORIGINAL) The method of fabricating lead-free solder bumps according to claim 16, further comprising:

lithographing a photoresist on the UBM layer, excluding a portion of the UBM layer corresponding to the electrode pad, after said forming an UBM layer on the wafer;

removing the photoresist after said plating solder on the copper layer; and

etching the UBM layer using the solder as a mask after said reflowing the solder to form the solder bumps.